

# Customer Guide to Interconnection of Generating Plants to TVA's Transmission System

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## Definition of Interconnection Request

A request for interconnection is a written request to TVA for interconnection of a new (or materially changed) generating facility with the TVA transmission system. A complete request for interconnection must include all information required for TVA to perform an Interconnection System Impact Study. The following information is required for an interconnection request:

- The identity, address, telephone number, and facsimile number of the Customer and the contact person or persons.
- A showing of creditworthiness.
- The identity of the parcel(s) of land on which the proposed generating facility will be located and the location(s), if known, of the recipient(s) of the power from the facility.
- Size (summer and winter nominal capacity ratings), type (peaking vs. base load), energy source, and number of units for the proposed generating facility.
- Date when construction of the proposed facility would begin, date when facility would be ready for commercial operation, and date for any tests and startup power required.
- An estimate of the amount of capacity and energy expected to be delivered to TVA's transmission system.
- The location (and voltage) of the point(s) of delivery where the capacity and energy output will be delivered to TVA's transmission system.
- Description and drawing of the proposed interconnection configuration.
- Proposed ownership arrangement of the facilities involved.
- Identification of the Control Area from which the proposed generating facility will be operating.
- Completed TVA Interconnection Request Data Sheet that identifies the generator, transformer, exciter, and governor data necessary to perform transient stability, load flow, and short circuit studies. (The TVA Interconnection Request Data Sheet is enclosed as Enclosure 1.)
- Deposit of \$10,000 per request for a particular Site (defined as a particular location, connected to a particular transmission line).

## Transmission Service

A request for interconnection under this Customer Guide to Interconnection provides only for the interconnection of the generating facility to the TVA transmission system and does not in any way constitute a request for transmission service or guarantee the ability of the transmission system to deliver the facility electrical output to any specific load either on TVA's system or off system. Any transmission service request must be submitted to TVA separately. The procedures and deadlines in TVA's Transmission Service Guidelines (Guidelines) shall govern processing requests for transmission service. If the entity purchasing or selling the generating facility's electrical output requests firm transmission service, TVA will perform a transmission system impact study as provided under the Guidelines in order to determine the capability of the transmission system to deliver power from the Facility to the identified loads. The entity purchasing or selling the generating facility's electrical output shall arrange for and be solely responsible for any necessary transmission of the facility electrical output to third parties, in accordance with the Guidelines.



## **Procedures and Requirements for Interconnection**

All proposals for new (or materially changed) generation in the TVA Control Area must follow standard TVA procedures to initiate and complete the interconnection process. The following procedures apply to all requests for interconnection received by TVA.

### **Request for Interconnection**

1. The Customer sends the written request for interconnection to: Interconnection Specialist, Tennessee Valley Authority, MR BA, 1101 Market Street, Chattanooga, TN 37402, with as much lead time as possible before the interconnection is to be established.
2. TVA date stamps the request on the business day it is received. The date when the request is officially received (and the Customer's priority) is established when both a written request for interconnection at a Site and the check for the deposit of \$10,000 have been received by TVA, provided that the operation date is within 5 years of the initial request date. An operation date beyond 5 years may be deemed acceptable if the type of generation facility requires a long lead time (e.g., nuclear plant, pumped storage facility). A request received on a non-business day shall be considered as received on the next business day. All requests received on the same business day shall be deemed to have been received simultaneously and shall have the same priority.
3. TVA acknowledges receipt of the request.
4. TVA responds to the Customer and notifies the Customer of:
  - Any deficiencies in the request and the date when any additional information is needed in order for the Customer to retain its priority.
  - Procedures and deadlines that TVA expects the Customer to follow in order to maintain its priority.
5. **The Customer has 20 business days from the date of TVA's letter to the Customer to provide the additional information needed to complete the request and to begin the Interconnection System Impact Study. If the Customer does not meet this deadline, the Customer loses its priority, the request is considered to be withdrawn, and the Customer is so informed in writing by TVA.**

### **Interconnection System Impact Study**

6. TVA sends an Interconnection System Impact Study Agreement to the Customer. The Interconnection System Impact Study Agreement includes:
  - The scope of the study.
  - The estimated cost associated with completion of the study. (Note: While TVA shall provide the Customer with its best cost estimate of the Interconnection System Impact Study, such estimates shall not be binding. The Customer shall agree in writing to pay for all costs actually incurred by TVA.)
  - Provision for the Customer to pay a \$50,000 deposit at the time the signed Interconnection System Impact Study Agreement is returned to TVA. This deposit shall be applied to the Customer's cost responsibility for the Interconnection System Impact Study.
  - The estimated schedule for completion of the study. (Note: Interconnection System Impact Studies shall be conducted in the order in which an executed Interconnection System Impact Study Agreement is received (after receipt of a fully completed request for



interconnection). TVA shall endeavor to complete the Interconnection System Impact Study by the estimated date stated in the Interconnection System Impact Study Agreement. If TVA anticipates being unable to complete the study in the allotted time period, the Customer is notified of the new estimated completion date and an explanation of why additional time is required. TVA shall use the same due diligence in completing the Interconnection System Impact Study for any other Customer as it uses when completing studies for itself.)

- Provision that distributors of TVA power and TVA's directly served customers shall be reimbursed by the Customer (through TVA) for any studies they must perform to study impacts on their system(s) due to the interconnection of the Customer's generating facility on TVA's system.
- Provision that arrangements shall be made between the Customer and any affected neighboring utility that will need to conduct its own studies to assess the impact of the generating facility on its system.

A model Interconnection System Impact Study Agreement is enclosed as Enclosure 2.

- 7. The Customer has 10 business days from the date of TVA's letter to the Customer to return the signed Interconnection System Impact Study Agreement to the Interconnection Specialist and pay a \$50,000 deposit which shall be applied to the Customer's cost responsibility for the Interconnection System Impact Study. If the Customer does not meet this deadline, the Customer loses its priority, the request is considered to be withdrawn, and the Customer is so informed in writing by TVA.**
- 8. If, after the interconnection request has been submitted, the Customer materially modifies data or other information provided for the Interconnection System Impact Study (e.g., change in Site, change in MW, change in generator configuration) and if, as a result of the modification, the time or effort it takes to perform any third party(s)' ongoing or pending Interconnection System Impact Study will be significantly prolonged or affected, TVA shall inform the Customer in writing that it will lose its priority and that the original request will be considered to be withdrawn if the Customer proceeds with the modified request. The Customer has 7 business days from the date of TVA's letter to the Customer to decide whether to proceed with the modified request and concomitant loss of priority or whether to maintain its original priority by reinstating the original request to the extent that it does not materially modify data or other information provided for the Interconnection System Impact Study. If the Customer does not respond within the specified time period, the original request and priority shall be considered terminated, and the modified request shall be considered as a new request.**
9. TVA sends the draft Interconnection System Impact Study report to the Customer. The Customer must provide comments on the draft Interconnection System Impact Study report to the Interconnection Specialist within 10 business days of the date of TVA's letter transmitting the draft study report to the Customer. Otherwise, the final report will be issued without consideration of the Customer's comments.
  - The Interconnection System Impact Study normally includes load flow studies to identify thermal overloads and reactive problems, fault analysis to identify overstressed breakers due to increased fault levels, and transient stability studies to determine if the transmission system can absorb the output of the plant. In cases where the TVA transmission system is inadequate to accommodate the requested interconnection, solution(s) and budget estimates shall be provided. (Note: While TVA shall provide the Customer with its best cost



estimate of the new facilities and other charges that may be incurred, such estimates shall not be binding.)

- Requests for interconnection are studied both (1) as incremental additions to committed projects (e.g., projects with an executed Interconnection Agreement and authorized TVA projects are included in the base case) and (2) as incremental additions to both committed projects in the base case and other proposed projects with prior completed requests for interconnection.
- If, during the Interconnection System Impact Study, TVA identifies any potential impacts on the system of a distributor of TVA power, a TVA directly served customer's system, and/or a neighboring utility's system caused by the Customer's generating facility interconnecting to TVA's system, TVA shall notify the Customer of this and shall also notify the distributor of TVA power, the directly served customer, and/or the neighboring utility that is potentially impacted.

### **Interconnection Facilities Study**

10. TVA sends to the Customer an Interconnection Facilities Study Agreement, the scoping workshop checklist, and a request for information necessary to perform Site visits. The Interconnection Facilities Study Agreement addresses:

- The pre-scoping Site inspection.
- If transmission line routing is needed, authorization for the release of information required for siting studies, which involve a public process.
- Preparation for and completion of the scoping workshop. (Note: The scoping workshop includes both TVA and representatives of the Customer as joint participants.)
- Preparation and issuance of the Interconnection Facilities Study report.
- The estimated cost associated with completion of the study. (Note: While TVA shall provide the Customer with its best cost estimate of the Interconnection Facilities Study, such estimate shall not be binding. The Customer shall agree in writing to pay for all costs actually incurred by TVA.)
- Provision for the Customer to pay a \$100,000 deposit at the time the signed Interconnection Facilities Study Agreement is returned to TVA. This deposit shall be applied to the Customer's cost responsibility for the Interconnection Facilities Study.
- The estimated schedule for completion of the study. (Note: TVA shall endeavor to complete the Interconnection Facilities Study by the estimated date stated in the Interconnection Facilities Study Agreement. If TVA anticipates being unable to complete the study in the allotted time period, TVA notifies the Customer of the new estimated completion date and an explanation of why additional time is required. TVA shall use the same due diligence in completing the Interconnection Facilities Study for any other Customer as it uses when completing studies for itself.)
- A list of requirements that the Customer must meet to complete the Interconnection Facilities Study.
- Provision that distributors of TVA power and TVA's directly served customers shall be reimbursed by the Customer (through TVA) for any studies they must perform due to the interconnection of the Customer's generating facility on TVA's system.
- Provision that arrangements shall be made between the Customer and any affected neighboring utility that will need to conduct its own studies to assess the impact of the generating facility on its system.

A model Interconnection Facilities Study Agreement is enclosed as Enclosure 3.

A scoping workshop checklist is enclosed as Enclosure 4.



11. **The Customer has 10 business days from the date of TVA's letter to the Customer to return the signed Interconnection Facilities Study Agreement to the Interconnection Specialist and pay a \$100,000 deposit which shall be applied to the Customer's cost responsibility for the Interconnection Facilities Study. If the Customer does not meet this deadline, the Customer loses its priority, the request is considered to be withdrawn, and the Customer is so informed in writing by TVA.**
12. **Dates for transmission line siting (if transmission line siting is needed) and scoping the project are set by TVA in consultation with the Customer, taking into consideration all Customers available to enter the Interconnection Facilities Study phase of the process. If the Customer fails to provide the necessary information or make the decisions required to complete the scoping workshop deliverables prior to or during the scoping workshop, the Customer loses its priority, the request is considered to be withdrawn, and the Customer is so informed in writing by TVA.**
13. TVA sends to the Customer the project scoping package, which constitutes the completion of the Interconnection Facilities Study.
  - The project scoping package contains the deliverables from the scoping workshop which include design specifications, the construction schedule, and cost estimates. (Note: While TVA shall provide the Customer with its best cost estimate of the new facilities and other charges that may be incurred and with its best estimates of the construction schedule dates, such estimates shall not be binding.)A more detailed list of the contents of the project scoping package is enclosed as Enclosure 5.

### **Environmental Review**

14. TVA's initial environmental review can begin prior to execution of the Interconnection Agreement if the Customer enters into an Environmental Review Agreement. TVA cannot begin the environmental review until either the Environmental Review Agreement or the Interconnection Agreement is executed.
  - The environmental review can be started before the Interconnection Facilities Study, but the bulk of the environmental review cannot be completed until after the Interconnection Facilities Study is completed.
  - The time typically required to complete the environmental review will vary depending on the type of facility, the level of review necessary, and environmental impacts. Typical ranges of time to complete various levels of environmental review are as follows:

– EDR (Environmental Decision Record)	2-4 months
– EA (Environmental Assessment)	6-9 months
– EIS (Environmental Impact Study)	12-18 months

### **Interconnection Agreement**

15. **If within 60 business days from TVA's offer to begin negotiations (which offer shall include a draft Interconnection Agreement), a final Interconnection Agreement is not negotiated, the Customer loses its priority, the request is considered to be withdrawn, and the Customer is so informed in writing by TVA.**
16. TVA sends two original copies of the Interconnection Agreement to the Customer for execution.

17. The Customer has 20 business days from the date of TVA's letter to the Customer to return the signed copies of the Interconnection Agreement to the Interconnection Specialist. If the Customer does not meet this deadline, the Customer loses its priority, the request is considered to be withdrawn, and the Customer is so informed in writing by TVA.

18. When and if TVA Board approval is obtained for an Interconnection Agreement, TVA sends one fully executed original of the Interconnection Agreement to the Customer.

**Engineering and Construction**

19. In the event of an unexcused stoppage of work by the Customer, the consequences will be dealt with in accordance with the terms of the Interconnection Agreement.



## **Confidential Treatment of Interconnection Requests**

To meet the confidentiality needs of competing power suppliers and in keeping with FERC's guidance regarding posting information concerning interconnection requests, the following applies:

- Upon receipt of an interconnection request, TVA shall post the following information on its web site with a link from TVA's Open Access Same-Time Information System (OASIS):
  - Date of Customer's request,
  - Size of generator(s) in MW,
  - State and county in which the proposed generation will be located, and
  - Status of the request (active, withdrawn, or in-service).

The Customer's name shall not be included in the posting.

(Note: Due to previous confidentiality commitments for requests received before August 1, 2000, a date and blank space shall be posted for those Customers that applied for interconnection prior to that date and who refuse to have non-public information posted. This is a transition measure.)

- Information about interconnection requests, other than the information being posted on TVA's web site, that has not been made public by the Customer is to be shared within TVA or with others outside TVA (e.g., another utility's transmission organization with whom the entity is requesting service or another utility that is potentially impacted by the generator) only on a confidential "need to know" basis as is necessary to study and respond to the request or as required by law.
- At times there is a need for TVA to discuss interconnection projects, such as with local officials in an area where a proposed generator is to be located. To the extent that a project has been made public by the Customer or to the extent it is posted on TVA's web site, TVA may share that information as it feels appropriate.
- If the Customer submits information to TVA, regardless of whether an Interconnection Agreement is ultimately entered into, at least some of the information may become public information under the Freedom of Information Act. In the event of a request for confidential information under that act, TVA shall continue to treat the information as confidential to the extent permitted by law, but shall make available to requesting parties those parts of the information that must be disclosed.

## **TVA's Options to Waive or Modify**

If the application of the strict letter of the interconnection requirements, procedures, and priorities contained in this document would produce an unjust or inequitable result in a particular situation, TVA may in its discretion waive same, provided that TVA grants such waivers in a nondiscriminatory manner as is consistent with applicable legal requirements. Additionally, TVA reserves the right to modify this document at any time, including without limitation the requirements, procedures, priorities, fees, and charges specified herein.



## Priorities for Interconnection Requests\*

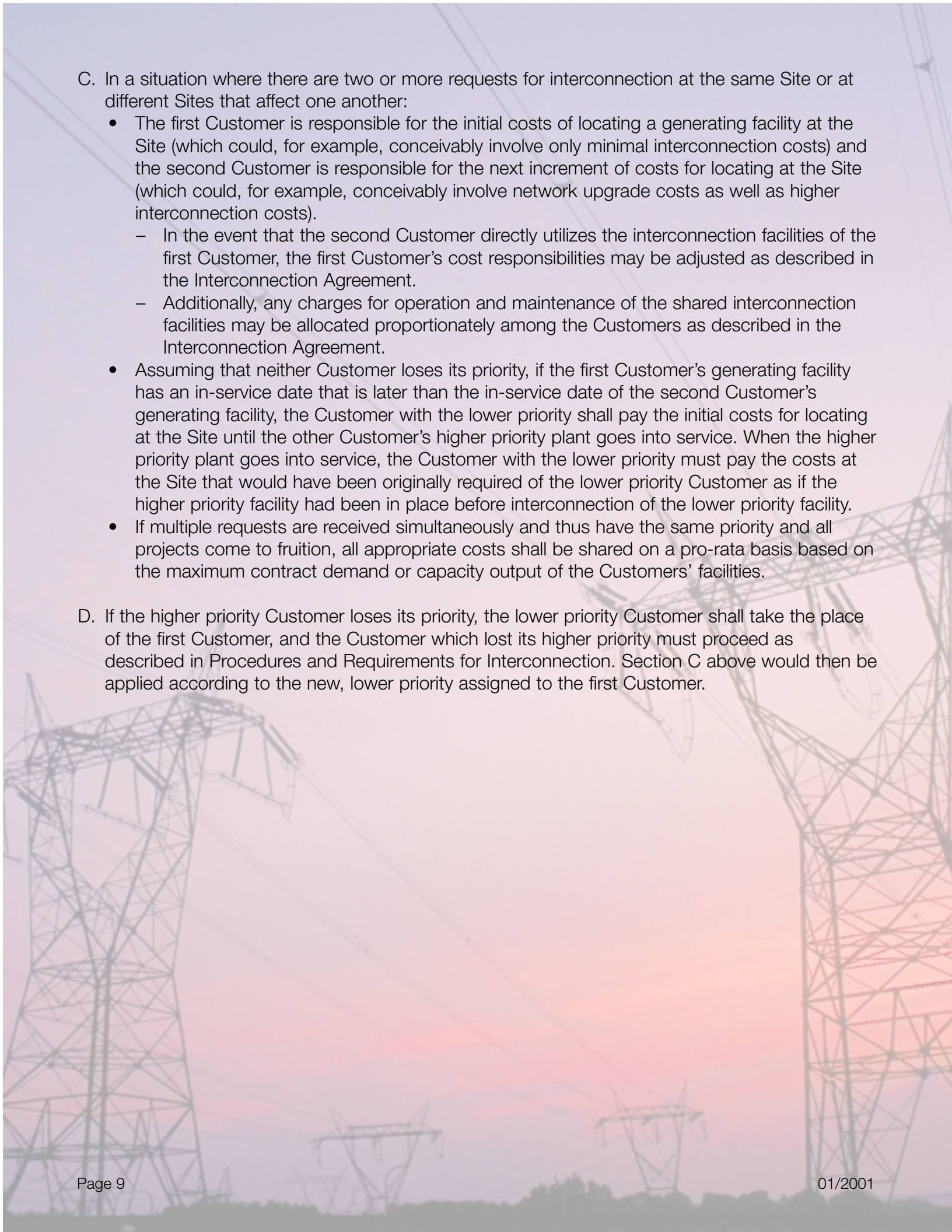
- A. The priority for each Customer is established based on a first-come, first-served basis established by the date by which both that Customer's initial written request for interconnection at a Site and a check for the \$10,000 deposit are received by TVA, provided that the operation date is within 5 years of the initial request date. An operation date beyond 5 years may be deemed acceptable if the type of generation facility requires a long lead time (e.g., nuclear plant, pumped storage facility).

A request or check received on a non-business day shall be considered as received on the next business day. All requests and checks received on the same business day shall be deemed to have been received simultaneously and shall have the same priority. (Note: The priority associated with a specific application for interconnection cannot alone be sold or reassigned. This shall not affect the ability of a Customer to sell or reassign its ownership interest in the generating project itself.)

- B. There are certain time requirements that each Customer must meet at each stage of the process in order to maintain its priority. (See steps shown in bold type in Procedures and Requirements for Interconnection for the time requirements that must be met by each Customer.)
- If the Customer does not meet any one of these time requirements, the Customer loses its priority and the request is deemed to be withdrawn unless the Customer asks in writing for the original request to be considered as a new request. If the Customer asks that the original request be considered as a new request received on the date that the Customer resubmitted the request and if no additional parties have submitted requests for interconnection since the Customer submitted the original request, the new request date shall be considered the new beginning date for the time requirements that the Customer must meet for the stage of the process which the Customer was in when the priority was lost. For example, if the Customer failed to return the Interconnection Facilities Study Agreement to the Interconnection Specialist within the prescribed period indicated in TVA's letter to the Customer (letter mailed January 4, 1999 in this example), the Customer would lose its priority at the end of the 10 business day period (at the close of business on January 19, 1999). On the date TVA received a timely request from the Customer that it wishes its original request to be considered as a new request, the Customer would then have 10 business days from the date of receipt by TVA (as indicated by TVA in a letter to the Customer) to return the executed Interconnection Facilities Study Agreement in order to maintain the new priority. The remainder of the process would continue as stated above in Procedures and Requirements for Interconnection.
  - If, however, TVA has received any additional requests for interconnection during the time period between the Customer's original request date and the Customer's new request date, the Customer's Interconnection System Impact Study would have to be reevaluated based on the fact that the Customer has lost its priority. In this situation, the process would resume at the stage described in Step 6 in Procedures and Requirements for Interconnection.

\* The priority that a Customer receives determines which Customer pays the initial costs for locating a generating facility at a Site (with lower priority Customers paying the next increment of costs).



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- C. In a situation where there are two or more requests for interconnection at the same Site or at different Sites that affect one another:
- The first Customer is responsible for the initial costs of locating a generating facility at the Site (which could, for example, conceivably involve only minimal interconnection costs) and the second Customer is responsible for the next increment of costs for locating at the Site (which could, for example, conceivably involve network upgrade costs as well as higher interconnection costs).
    - In the event that the second Customer directly utilizes the interconnection facilities of the first Customer, the first Customer's cost responsibilities may be adjusted as described in the Interconnection Agreement.
    - Additionally, any charges for operation and maintenance of the shared interconnection facilities may be allocated proportionately among the Customers as described in the Interconnection Agreement.
  - Assuming that neither Customer loses its priority, if the first Customer's generating facility has an in-service date that is later than the in-service date of the second Customer's generating facility, the Customer with the lower priority shall pay the initial costs for locating at the Site until the other Customer's higher priority plant goes into service. When the higher priority plant goes into service, the Customer with the lower priority must pay the costs at the Site that would have been originally required of the lower priority Customer as if the higher priority facility had been in place before interconnection of the lower priority facility.
  - If multiple requests are received simultaneously and thus have the same priority and all projects come to fruition, all appropriate costs shall be shared on a pro-rata basis based on the maximum contract demand or capacity output of the Customers' facilities.
- D. If the higher priority Customer loses its priority, the lower priority Customer shall take the place of the first Customer, and the Customer which lost its higher priority must proceed as described in Procedures and Requirements for Interconnection. Section C above would then be applied according to the new, lower priority assigned to the first Customer.



**Customer** | **TVA**

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graph TD
    subgraph Customer
        START([START]) --> PrepReq[Prepare interconnect request]
        Attach[Attach Interconnection Request Data Sheet Enclosure-1 and deposit] --> PrepReq
        Respond[Respond to TVA analysis of request and TVA requirements] --> PrepReq
        Resubmit{Resubmit??} -- Yes --> START
        Resubmit -- No --> STOP([STOP])
        Sign1{Sign??} -- Yes --> RecAgree50K
        Sign1 -- No --> Notice1[Notice of termination]
        Sign1 -- No --> Sign2{Sign}
        Sign2 -- Yes --> RecAgree20Days
        Sign2 -- No --> Notice2[Notice of termination]
        Withdraw{Withdraw} --> Notice3[Notice of termination]
        Withdraw -- Sign & return --> RecAgree100K
        Agree60Days{Agreement within 60 days?} -- No --> Notice4[Notice of termination]
        Agree60Days -- Yes --> SendAgreeToCust
        Sign3{Sign} -- No --> Notice5[Notice of termination]
        Sign3 -- Yes --> RecAgree20Days
        RecAgree20Days{Received within 20 days??} -- No --> Notice6[Notice of termination]
        RecAgree20Days -- Yes --> BoardApproval([Board approval])
        BoardApproval --> SendCopy[Send copy of approved and executed agreement to customer]
        SendCopy --> Consequences[Consequences dealt with in keeping with the agreement]
    end

    subgraph TVA
        DateStamp[Date stamp and assign priority relative to other requests] --> Acknowledge[Acknowledge receipt]
        Acknowledge --> NoteInfo[Note additional information required]
        NoteInfo --> Respond
        NoteInfo --> RecAgree50K{Receive agreement with $50,000 deposit within 10 days?}
        RecAgree50K -- No --> Notice1
        RecAgree50K -- Yes --> RequestStudy[Request impact study]
        RequestStudy --> PrepStudy[Prepare impact study]
        PrepStudy --> SignifChanges{Significant changes received?}
        SignifChanges -- No --> SendDraft[Send draft impact report to customer]
        SignifChanges -- Yes --> RecAgree50K
        SendDraft --> IssueFinal[Issue final impact report]
        IssueFinal --> SendFacilities[Send standard facilities study agreement Enclosure-3, scoping checklists Enclosure-4, and site-visit information to customer]
        SendFacilities --> RecAgree100K{Receive agreement with $100,000 deposit within 10 days?}
        RecAgree100K -- No --> Notice2
        RecAgree100K -- Yes --> ExecuteScoping[Execute scoping preparation activities]
        ExecuteScoping --> HoldWorkshop[Hold project scoping workshop]
        HoldWorkshop --> AdequateInfo{Did customer provide adequate information to complete the workshop?}
        AdequateInfo -- No --> Notice3
        AdequateInfo -- Yes --> PrepScoping[Prepare scoping package]
        PrepScoping --> SendScoping[Send scoping package to customer Enclosure-5]
        SendScoping --> EarlyEnvReview{Early environmental review??}
        EarlyEnvReview -- No --> Notice4
        EarlyEnvReview -- Yes --> PrepEnvAgree[Prepare environmental review agreement]
        PrepEnvAgree --> NegotiateAgree[Negotiate a final interconnection agreement]
        NegotiateAgree --> Agree60Days
        SendAgreeToCust[Send agreement to customer] --> Sign3
        RecAgree20Days --> BoardApproval
        BoardApproval --> SendCopy
        SendCopy --> Consequences
        Consequences --> CompleteProject[Complete project]
        CompleteProject --> AgreementViolations{Agreement violations by customer?}
        AgreementViolations -- Yes --> CompleteProject
        AgreementViolations -- No --> CompleteProject
    end
  
```

Abbreviated Interconnect Diagram:R4-Color.cdd



# Enclosure 1

## TVA Interconnection Request Data Sheet

Requester: \_\_\_\_\_

Site: \_\_\_\_\_

Generator Make and Model (Separate sheet required for each type of Generator): \_\_\_\_\_

Number of generators of this Make and Model at this site: \_\_\_\_\_

Generator Nameplate Ratings (per generator):

MVA: \_\_\_\_\_ MW: \_\_\_\_\_ Power Factor: \_\_\_\_\_ Terminal Voltage: \_\_\_\_\_ kV Machine Speed: \_\_\_\_\_ rpm

Expected Summer MW output: \_\_\_\_\_ Expected Winter MW output: \_\_\_\_\_

Machine Reactances in Per Unit on rated MVA base:

$X_d$  \_\_\_\_\_  $X'_d$ (unsat.) \_\_\_\_\_  $X'_d$ (sat.) \_\_\_\_\_  $X''_d$ (unsat.) \_\_\_\_\_  $X''_d$ (sat.) \_\_\_\_\_

$X_q$  \_\_\_\_\_  $X'_q$ (unsat.) \_\_\_\_\_  $X_L$  \_\_\_\_\_  $X_2$  (unsat.) \_\_\_\_\_  $X_2$ (sat.) \_\_\_\_\_  $X_0$  \_\_\_\_\_

Armature Winding Resistance (per-unit):

$R_1$  \_\_\_\_\_  $R_2$  \_\_\_\_\_  $R_0$  \_\_\_\_\_

Generator Neutral Impedance Data: \_\_\_\_\_ Sketch Attached? ☐

Machine Time Constants (Seconds):

$T'_{do}$  \_\_\_\_\_  $T''_{do}$  \_\_\_\_\_  $T'_{qo}$  \_\_\_\_\_  $T''_{qo}$  \_\_\_\_\_

Total Spinning Inertia (H constant): \_\_\_\_\_ MW-Sec/MVA

**Very Important** - Include Generator rotor, turbine, exciter if spinning, and coupling

Generator Step-Up Transformers: \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ kV(single-phase ☐; three-phase ☐ )

	% R	% X	MVA Base	Nameplate Ratings	
H-L	_____	_____	_____	H _____ / _____ / _____ / _____	MVA
H-T	_____	_____	_____	L _____ / _____ / _____ / _____	MVA
L-T	_____	_____	_____	T _____ / _____ / _____ / _____	MVA

Winding Connection(wye, delta): H \_\_\_\_\_ L \_\_\_\_\_ T \_\_\_\_\_ Sketch Attached? ☐

Neutral Impedance Data: \_\_\_\_\_ Sketch Attached? ☐

Power Transformers - Attach same data as the Generator Step-Up Transformers above: Attached ? ☐

•TVA requires a delta winding (may be embedded) in all power transformers

•Upon installation, transformer test reports must be provided to TVA

### Attachments

Sketch of Proposed Interconnection Configuration: \_\_\_\_\_ Provided? ☐

Generator Reactive Capability Curves: Dwg/ID No. \_\_\_\_\_ Provided ? ☐

Generator Saturation Curves: Dwg/ID No. \_\_\_\_\_ Provided? ☐

Construction and Emergency Backup Power Amounts and Arrangements Provided? ☐

IEEE/Power Technologies, Inc.® (PTI) Power System Simulator Software Models (Required) :

	IEEE/PTI Model Name	PTI Model Data Sheets Provided	Vendor Data Sheets Provided
Generator Model:	_____ GENROU	<input type="checkbox"/>	<input type="checkbox"/>
Exciter Model:	_____	<input type="checkbox"/>	<input type="checkbox"/>
Governor Model:	_____	<input type="checkbox"/>	<input type="checkbox"/>
Stabilizer Model:	_____	<input type="checkbox"/>	<input type="checkbox"/>

•Upon installation the models must be updated with actual data and the test results provided to TVA



\_\_PAP-\_\_

INTERCONNECTION SYSTEM IMPACT STUDY AGREEMENT

BETWEEN

TENNESSEE VALLEY AUTHORITY

AND

ABC GENERATING COMPANY

THIS AGREEMENT, made and entered into as of the \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by and between Tennessee Valley Authority ("TVA"), a corporation created by and existing under and by virtue of the Tennessee Valley Authority Act of 1933, as amended, and ABC Generating Company ("ABC"), a \_\_\_\_\_ organized under the laws of the State of \_\_\_\_\_. TVA and ABC are also hereinafter sometimes referred to individually as "Party" and collectively as "Parties."

RECITALS

WHEREAS, ABC is proposing to develop a \_\_\_\_\_-MW generating facility to be located in \_\_\_\_\_, \_\_\_\_\_ ("Facility"); and

WHEREAS, the Facility is to be located near TVA's \_\_\_\_\_; and

WHEREAS, ABC is currently proposing to establish a \_\_\_\_-kV interconnection with the TVA transmission system at TVA's \_\_\_\_\_ in order to transmit power and energy from the Facility; and

WHEREAS, TVA has determined that an interconnection system impact study ("Study") will need to be performed to determine the impact of the interconnection of the Facility to the TVA transmission system;

NOW, THEREFORE, TVA and ABC agree as follows:

1. TVA shall perform a Study to identify those impacts that interconnection of the Facility could reasonably be anticipated to have on the operation and reliability of the TVA transmission system. The Study shall include load flow studies to identify thermal overloads and reactive problems, fault analysis to identify equipment overstressed due to increased fault levels, and transient stability studies to determine if the transmission system can absorb the Facility electrical output. The report summarizing the Study results shall identify any system constraints and the need for any modifications to TVA's transmission system (including interconnection facilities and network upgrade



facilities) that are required to connect the Facility to the TVA system. Said report shall also include preliminary cost estimates for any such modifications identified by the Study. The Study shall use good utility practice, engineering and operating principles, and standards, guidelines, and criteria of TVA, the Southeastern Electric Reliability Council, and the North American Electric Reliability Council. The Study shall be performed utilizing the information specified in ABC's request for interconnection dated \_\_\_\_\_.

\_\_\_\_\_. Within the framework of the scope of the Study that has been agreed upon as discussed above, TVA shall use its sole discretion as to the details and methods used to perform the Study, including the use by TVA of third party(s) to assist TVA in performing the Study. The Study shall include all transmission system additions and/or modifications, if any, that TVA plans to install whether or not ABC constructs the Facility. The Study shall be performed jointly with other utilities where appropriate.

2. In performing the Study, TVA shall rely on existing transmission planning studies to the extent reasonably practicable. ABC shall not be assessed a charge for such existing studies; however, ABC shall be fully responsible for charges associated with any modifications to existing planning studies that are reasonably necessary to evaluate the impact of the Facility on the TVA transmission system. The Study shall be performed to assess the adequacy of TVA system facilities, not ABC's facilities. TVA shall proceed with the Study based on the technical information contained in the \_\_\_\_ letters referenced in Section 1 of this Agreement. If additional information is required by TVA to perform the Study, TVA shall request the information and ABC shall provide it as soon as reasonably possible.

If ABC materially modifies data or other information previously provided by ABC to TVA for the Study, which modifications will significantly prolong the time or increase the effort required by TVA to perform any ongoing or pending system impact study of a third party, TVA may, upon seven (7) business days' prior written notice, terminate this Agreement and ABC's request for interconnection shall be considered by TVA to be withdrawn; provided, however, ABC shall reimburse TVA, in accordance with the provisions of Section 7, for TVA's actual costs, including applicable overheads, incurred by TVA in performing the Study through the date of termination. During such 7-business-day notice period, ABC may elect to refashion such modifications in a manner that will avoid such time and effort impacts to TVA's satisfaction, or ABC may retract such modifications; in either such event TVA's termination notice shall be deemed withdrawn. Any modifications suggested by TVA or requested as a result of analysis performed by TVA as part of the Study or otherwise shall not trigger TVA's termination rights under this Section 2. Any termination and withdrawal under this Section 2 shall not affect ABC's ability to submit a new request for interconnection using the materially modified data or other information. Any such new request shall be treated in all respects as a new request, however, including assignment of a new interconnection priority based on the date of the new request.

3. TVA shall use due diligence to complete the Study by \_\_\_\_\_, but due to the complexity of the Study, TVA provides no guarantee that the Study can be completed within this time period. In the event TVA is unable to complete the Study within such time period, it shall so notify ABC and provide an estimated completion date along with

an explanation of the reasons why additional time is required to complete the Study. Upon completion of the Study, TVA shall provide a report summarizing the Study results to ABC.

4. THE STUDY SHALL EVALUATE ONLY THE IMPACTS OF INTERCONNECTING THE FACILITY TO THE TVA TRANSMISSION SYSTEM AND SHALL NOT ADDRESS THE ABILITY OF THE TVA TRANSMISSION SYSTEM TO TRANSFER POWER OR ENERGY FROM THE FACILITY TO ANY SPECIFIC LOAD EITHER ON THE TVA SYSTEM OR OFF SYSTEM. Any transmission service request must be submitted to TVA separately. The procedures and deadlines in TVA's Transmission Service Guidelines ("Guidelines") shall govern processing requests for transmission service. If the entity purchasing or selling the Facility electrical output requests firm transmission service, TVA will perform a transmission system impact study as provided under the Guidelines in order to determine the capability of the transmission system to deliver power from the Facility to the identified loads. The entity purchasing or selling the Facility electrical output shall arrange for and be solely responsible for any necessary transmission of the Facility electrical output to third parties, in accordance with the Guidelines.
5. As a part of ABC's request for interconnection, ABC submitted to TVA a deposit of \$10,000 ("Deposit"). The Deposit shall be applied (as specified in Section 7) to ABC's reimbursement to TVA for TVA's actual costs, including applicable overheads, incurred by TVA in performing the Study.
6. Concurrent with its execution of this Agreement, ABC shall remit to TVA by electronic transfer \$50,000 ("Upfront Payment"). The Upfront Payment shall be applied (as specified in Section 7) to ABC's reimbursement to TVA for TVA's actual costs, including applicable overheads, incurred by TVA in performing the Study. The Upfront Payment shall be made via the Automated Clearing House (ACH) to the following account:

Cash Link-ACH Receiver  
401 14th Street, S.W.  
Washington, D.C. 20227  
Routing Transit No. 051036706  
Account No. 349000, for the credit of  
Tennessee Valley Authority  
Contact (865) 632-8125 with any questions
7. ABC shall reimburse TVA for its actual costs, including applicable overheads, incurred in performing the Study. Said reimbursement is estimated, for convenience only, to be approximately \$\_\_\_\_\_. If the total actual costs, including applicable overheads, incurred by TVA in performing the Study exceed the total of the Deposit and the Upfront Payment, TVA shall, as soon as practicable after completion of the Study, submit to ABC a written invoice for the excess amount. Such invoice shall be due and payable twenty (20) days after the date of the invoice. If the due date falls on a non-business day, then the payment shall be due on the next following business day. A "business day" shall mean any day except Saturday, Sunday, or a weekday that is observed by TVA as a Federal holiday. If the total actual costs, including applicable overheads, incurred by TVA in performing the Study are less than the total of the



Deposit and the Upfront Payment, TVA shall refund the difference to ABC. Any payments due under this Section 7 shall be made by electronic transfer to an appropriate account designated by the Party to whom the payment is owed.

If ABC fails to pay the amount of TVA's invoice when due, then ABC shall pay interest, calculated in accordance with the methodology specified for interest on refunds in FERC's regulations at 18 CFR § 35.19a(a)(2)(iii), on the amount that is not paid from the date that such amount is due through the date on which TVA receives payment. TVA shall submit an invoice to ABC for such added charge, which shall be due and payable upon receipt.

In case any portion of any invoice is the subject of a bona fide dispute, the undisputed amount shall be payable when due as described above. The disputed amount subsequently determined to be owed shall be paid promptly after such determination, with interest at the rate specified above from the date such amount would have been due in the absence of any dispute.

Invoices shall be mailed by TVA to ABC at the address indicated below:

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8. If, while performing the Study, TVA identifies any potential impacts on the system of either a distributor of TVA power or a directly-served customer of TVA ("TVA Customer"), TVA shall notify both the TVA Customer and ABC that TVA has determined that the Facility has the potential to impact the TVA Customer's system. It is recognized by the Parties that the TVA Customer may be required to perform a system impact study to determine the impacts of the Facility on the TVA Customer's system. In such case, TVA shall enter into a separate letter agreement with the TVA Customer which letter agreement shall include, among other things, provisions governing the TVA Customer's invoicing TVA for the cost of performing the system impact study and TVA's release of confidential information to the TVA Customer. ABC shall reimburse TVA for all payments made by TVA to the TVA Customer as compensation for the costs incurred by the TVA Customer in performing the system impact study. The provisions of Section 7 shall apply to invoices issued by TVA under this Section 8.
9. If, while performing the Study, TVA identifies any potential impacts on the system of a neighboring utility other than a TVA Customer, TVA shall notify both said neighboring utility and ABC that TVA has determined that the Facility has the potential to impact the system of said neighboring utility. ABC and said neighboring utility shall enter into the contractual arrangements that said neighboring utility deems necessary for said neighboring utility to perform its own system impact study to determine the impacts of the Facility on its system.

10. TVA and ABC agree that any data provided pursuant to this Agreement and designated confidential by the providing Party shall be kept confidential, to the extent permitted by law, and that neither Party shall disclose such designated data, except as required by law; provided, however, that either Party may disclose such confidential designated data in any manner consistent with a written consent to such disclosure obtained from the providing Party prior to such disclosure or as provided below. Such consent shall not be unreasonably withheld. Notwithstanding the foregoing, TVA may disclose such confidential designated data on a strict need-to-know basis to third party(s) assisting TVA in performing the Study or to TVA Customer(s) as provided for in Section 8, provided, that said third party(s) and TVA Customer(s) have agreed to keep the designated data confidential. The Parties hereby consider this Agreement confidential and agree that, to the extent permitted by law, it shall also be kept confidential in accordance with this Section 10.

Data or information shall not be deemed confidential information where:

- (a) it becomes public information or is otherwise generally available to the public through no action or fault of the receiving Party;
- (b) it is already in the receiving Party's possession prior to the effective date of this Agreement and was not received directly or indirectly from the providing Party;
- (c) it is lawfully received by the receiving Party from a person who did not receive the same information directly or indirectly from the providing Party; or
- (d) it is at any time independently developed by employees or consultants of the receiving Party who have not had access to the confidential information in the possession of the receiving Party.

In the event that one Party is required by a State or Federal regulatory authority or court to disclose data previously provided in connection with the Study by the other Party under a confidentiality designation, the Party subject to such requirement shall exercise reasonable efforts to obtain a confidentiality agreement with or appropriate protective order from such State or Federal authority or court, as applicable, to preserve the confidentiality of the designated data to be disclosed. Further, upon receipt of such a demand for the data, the receiving Party shall promptly notify the other Party.



IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be signed by their respective duly authorized representatives.

ABC GENERATING COMPANY

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

TENNESSEE VALLEY AUTHORITY

By: \_\_\_\_\_

Terry Boston  
Executive Vice President  
Transmission/Power Supply Group

\_\_PAP-\_\_

INTERCONNECTION FACILITIES STUDY AGREEMENT

BETWEEN

TENNESSEE VALLEY AUTHORITY

AND

ABC GENERATING COMPANY

THIS AGREEMENT, made and entered into as of the \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by and between Tennessee Valley Authority ("TVA"), a corporation created by and existing under and by virtue of the Tennessee Valley Authority Act of 1933, as amended, and ABC Generating Company ("ABC"), a \_\_\_\_\_ organized under the laws of the State of \_\_\_\_\_. TVA and ABC are also hereinafter sometimes referred to individually as "Party" and collectively as "Parties."

RECITALS

WHEREAS, ABC is proposing to develop a \_\_\_\_\_-MW generating facility to be located in \_\_\_\_\_, \_\_\_\_\_ ("Facility"); and

WHEREAS, the Facility is to be located near TVA's \_\_\_\_\_; and

WHEREAS, ABC is currently proposing to establish a \_\_\_\_-kV interconnection with the TVA transmission system at TVA's \_\_\_\_\_ in order to transmit power and energy from the Facility; and

WHEREAS, TVA has completed an interconnection system impact study to determine the impact of the interconnection of the Facility to the TVA transmission system; and

WHEREAS, TVA's interconnection process requires that TVA perform an interconnection facilities study ("Study") in conjunction with the interconnection of the Facility to the TVA transmission system;

NOW, THEREFORE, TVA and ABC agree as follows:

1. In accordance with ABC's interconnection request, TVA shall perform, at ABC's expense, a detailed Study, which Study shall include a Project Scoping Workshop ("Workshop") and, if necessary, transmission line siting studies. The Study to be performed by TVA is an engineering study that includes, among other things, a cost estimate for the modifications needed to interconnect the Facility with the TVA



transmission system and an estimated scheduled completion date by which TVA anticipates completing the design, construction, installation, inspection, and testing of said modifications. As a part of the Study, TVA shall perform a site inspection prior to the Workshop. Upon TVA's request, ABC shall ensure that qualified personnel from ABC or its contractors accompany TVA on the site inspection. ABC shall provide free access to ABC's property to TVA and its agents to the extent necessary for TVA to complete the site inspection. TVA may, in its sole discretion, use third party(s) to assist TVA in performing the Study. The Study shall be performed jointly with other utilities where appropriate.

2. THE STUDY SHALL EVALUATE ONLY THE IMPACTS OF INTERCONNECTING THE FACILITY TO THE TVA TRANSMISSION SYSTEM AND SHALL NOT ADDRESS THE ABILITY OF THE TVA TRANSMISSION SYSTEM TO TRANSFER POWER OR ENERGY FROM THE FACILITY TO ANY SPECIFIC LOAD EITHER ON THE TVA SYSTEM OR OFF SYSTEM. Any transmission service request must be submitted to TVA separately. The procedures and deadlines in TVA's Transmission Service Guidelines ("Guidelines") shall govern processing requests for transmission service. If the entity purchasing or selling the Facility electrical output requests firm transmission service, TVA will perform a transmission system impact study as provided under the Guidelines in order to determine the capability of the transmission system to deliver power from the Facility to the identified loads. The entity purchasing or selling the Facility electrical output shall arrange for and be solely responsible for any necessary transmission of the Facility electrical output to third parties, in accordance with the Guidelines.
3. An integral part of performing the Study will be the Workshop. The Workshop is a joint effort between the Parties to develop a detailed scope of the work activities required for the interconnection of the Facility to the TVA transmission system, including, but not limited to, preliminary design specifications, construction schedules, and cost estimates. After consultation with ABC, TVA shall notify ABC of the date, time, and location of the Workshop. A checklist of activities to be completed in preparation for and during the Workshop is attached hereto as Exhibit A. To ensure the successful completion of the Workshop, it is necessary that qualified personnel from ABC or its contractors attend the Workshop and bring to the Workshop any information, including but not limited to drawings, diagrams, and equipment specifications necessary to complete the activities referred to on Exhibit A. Such qualified personnel attending the Workshop shall have the necessary power and authority to make decisions and commitments on behalf of ABC that are integral to satisfactorily completing the Workshop. If TVA, in its sole reasonable judgment, determines that ABC has failed to provide the information and qualified personnel required for the Workshop as provided for under this Section 3, TVA may, upon seven (7) business days' prior written notice, terminate this Agreement and ABC's request for interconnection shall be considered by TVA to be withdrawn; provided, however, ABC shall reimburse TVA, in accordance with the provisions of Section 6, for TVA's actual costs, including applicable overheads, incurred by TVA in performing the Study through the date of termination. Any termination under this Section 3 shall not affect ABC's ability to submit a new request for interconnection. Any such new request shall be treated in all respects as a new request, however, including assignment of a new

interconnection priority based on the date of the new request.

4. Following the completion of the Study, TVA will prepare and send to ABC a Project Scoping Package ("Package"), which constitutes the completion of the Study. The contents of a standard Package are attached hereto as Exhibit B. It is recognized by the Parties that any costs and construction schedules provided by TVA in the Package are estimates only, and such estimates shall not be binding on TVA. TVA shall use due diligence to complete the Study by \_\_\_\_\_, but due to the complexity of the Study, TVA provides no guarantee that the Study can be completed within this time period. In the event TVA is unable to complete the Study within such time period, it shall so notify ABC and provide an estimated completion date along with an explanation of the reasons why additional time is required to complete the Study.
5. Concurrent with its execution of this Agreement, ABC shall remit to TVA by electronic transfer \$100,000 ("Upfront Payment"). The Upfront Payment shall be applied (as specified in Section 6) to ABC's reimbursement to TVA for TVA's actual costs, including applicable overheads, incurred by TVA in performing the Study. The Upfront Payment shall be made via the Automated Clearing House ("ACH") to the following account:

Cash Link-ACH Receiver  
401 14th Street, S.W.  
Washington, D.C. 20227  
Routing Transit No. 051036706  
Account No. 349000, for the credit of  
Tennessee Valley Authority  
Contact (865) 632-8125 with any questions

6. ABC shall reimburse TVA for its actual costs, including applicable overheads, incurred in performing the Study. Said reimbursement is estimated, for convenience only, to be approximately \$\_\_\_\_\_. If the total actual costs, including applicable overheads, incurred by TVA in performing the Study exceed the Upfront Payment, TVA shall, as soon as practicable after completion of the Study, submit to ABC a written invoice for the excess amount. Such invoice shall be due and payable twenty (20) days after the date of the invoice. If the due date falls on a non-business day, then the payment shall be due on the next following business day. A "business day" shall mean any day except Saturday, Sunday, or a weekday that is observed by TVA as a Federal holiday. If the total actual costs, including applicable overheads, incurred by TVA in performing the Study are less than the Upfront Payment, TVA shall refund the difference to ABC. Any payments due under this Section 6 shall be made by electronic transfer to an appropriate account designated by the Party to whom the payment is owed.

If ABC fails to pay the amount of TVA's invoice when due, then ABC shall pay interest, calculated in accordance with the methodology specified for interest on refunds in FERC's regulations at 18 CFR § 35.19a(a)(2)(iii), on the amount that is not paid from the date that such amount is due through the date on which TVA receives payment. TVA shall submit an invoice to ABC for such added charge, which shall be due and payable upon receipt.

In case any portion of any invoice is the subject of a bona fide dispute, the undisputed



amount shall be payable when due as described above. The disputed amount subsequently determined to be owed shall be paid promptly after such determination, with interest at the rate specified above from the date such amount would have been due in the absence of any dispute.

Invoices shall be mailed by TVA to ABC at the address indicated below:

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7. It is recognized by the Parties that a distributor of TVA power or a directly-served customer of TVA ("TVA Customer") may be required to perform a facilities study as a result of the interconnection of the Facility to the TVA transmission system. In such case, TVA shall enter into a separate letter agreement with the TVA Customer which letter agreement shall include, among other things, provisions governing the TVA Customer's invoicing TVA for the cost of performing the facilities study and TVA's release of confidential information to the TVA Customer. ABC shall reimburse TVA for all payments made by TVA to the TVA Customer as compensation for the costs incurred by the TVA Customer in performing the facilities study. The provisions of Section 6 shall apply to invoices issued by TVA under this Section 7.
8. If the system of a neighboring utility other than a TVA Customer is affected by the interconnection of the Facility to the TVA transmission system, ABC and said neighboring utility shall enter into the contractual arrangements that said neighboring utility deems necessary for said neighboring utility to perform its own facilities study.
9. TVA and ABC agree that any data provided pursuant to this Agreement and designated confidential by the providing Party shall be kept confidential, to the extent permitted by law, and that neither Party shall disclose such designated data, except as required by law; provided, however, that either Party may disclose such confidential designated data in any manner consistent with a written consent to such disclosure obtained from the providing Party prior to such disclosure or as provided below. Such consent shall not be unreasonably withheld. Notwithstanding the foregoing, TVA may disclose such confidential designated data on a strict need-to-know basis to third party(s) assisting TVA in performing the Study or to TVA Customer(s) as provided for in Section 7, provided, that said third party(s) and TVA Customer(s) have agreed to keep the designated data confidential. The Parties hereby consider this Agreement confidential and agree that, to the extent permitted by law, it shall also be kept confidential in accordance with this Section 9.

Data or information shall not be deemed confidential information where:

- (a) it becomes public information or is otherwise generally available to the public through no action or fault of the receiving Party;
- (b) it is already in the receiving Party's possession prior to the effective date of this

Agreement and was not received directly or indirectly from the providing Party;

(c) it is lawfully received by the receiving Party from a person who did not receive the same information directly or indirectly from the providing Party; or

(d) it is at any time independently developed by employees or consultants of the receiving Party who have not had access to the confidential information in the possession of the receiving Party.

In the event that one Party is required by a State or Federal regulatory authority or court to disclose data previously provided in connection with the Study by the other Party under a confidentiality designation, the Party subject to such requirement shall exercise reasonable efforts to obtain a confidentiality agreement with or appropriate protective order from such State or Federal authority or court, as applicable, to preserve the confidentiality of the designated data to be disclosed. Further, upon receipt of such a demand for the data, the receiving Party shall promptly notify the other Party.

Notwithstanding the provisions of this Section 9, if TVA determines that transmission line siting will be needed as result of the interconnection of the Facility to the TVA transmission system, ABC authorizes TVA to publicly release any information about the Facility required for any transmission line siting studies to be performed by TVA.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be signed by their respective duly authorized representatives.

ABC GENERATING COMPANY

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

TENNESSEE VALLEY AUTHORITY

By: \_\_\_\_\_

Terry Boston  
Executive Vice President  
Transmission/Power Supply Group



## Exhibit A

### Checklist of Activities to Complete In Preparation for a Scoping Workshop

Checklist Revision Date: 6/30/00

**Project Name:**

**Project ID No:**

**Requested ISD:**

✓	Activity	Responsible	Status
<input type="checkbox"/>	Schedule Scoping Workshop	PD	
<input type="checkbox"/>	Identify Necessary Participants to Attend Scoping Workshop	PD	
<input type="checkbox"/>	Prepare and Distribute Workshop Announcement Memo	PD	
<input type="checkbox"/>	Discuss with Customer / Consultant Info Needed for Scoping	PD	
<input type="checkbox"/>	Conduct On-Site Review / Inspection	PD	
<input type="checkbox"/>	Initiate Most Economical Design Based on On-Site Review	PD	
<input type="checkbox"/>	Retrieve Drawings from Customer (if necessary)	PD	
<input type="checkbox"/>	Draft Prelim Specification Diagram Sketch into AutoCAD	PD	
<input type="checkbox"/>	Scan / Digitize Necessary Drawings	PD	
<input type="checkbox"/>	Prepare Preliminary Project Schedule	PD	
<input type="checkbox"/>	Prepare and Submit Data Sheet for EMF Calculations	TPD	
<input type="checkbox"/>	Develop Preliminary Specification Diagram	TPD	
<input type="checkbox"/>	Provide Prelim Specification Diagram to Sys Prot & Analysis	TPD	
<input type="checkbox"/>	Determine Need for and Discuss UF Relays with Customer	TPD	
<input type="checkbox"/>	Obtain Keep-Whole Letter (if not done previously)	TPD	
<input type="checkbox"/>	Develop Prelim Communication Specification Diagram	Comm Proj - Plng	
<input type="checkbox"/>	Develop One-Line Diagram and General Arrangement / Site Plan	Customer	
<input type="checkbox"/>	Submit One-Line and Gen Arr Plan to TVA (Two Weeks Prior to Workshop)	Customer	
<input type="checkbox"/>	Gather / Bring Sub Folder, TL Spec Book, P&P, etc. for Existing Facilities	SP, TLP, or CP	
<input type="checkbox"/>	Develop Work Hours for Estimates and Start Date / Durations for Schedule	SP, TLP, or CP	
<input type="checkbox"/>	Develop Preliminary Bill-of-Materials, including TIIC numbers	SP, TLP, or CP	
<input type="checkbox"/>	Develop Preliminary TL WO Sketch ("CED" Drawing)	TLP or CP	
<input type="checkbox"/>	Begin Determination of Number and Type of Structures	TLP or CP	
<input type="checkbox"/>	Develop Prelim General Arrangement Sketch, Initial and Ultimate	SP or CP	
<input type="checkbox"/>	Coordinate Arrangement of TLs with Substation Gen Arrangement Plan	TLP/CP & SP/CP	
<input type="checkbox"/>	Hold Public Info Day (if Necessary)	TLP-SEE	
<input type="checkbox"/>	Develop Prelim Siting Package	TLP-SEE	
<input type="checkbox"/>	Identify Number of Distrib Line, Hiway, and Railroad Crossings	TLP-SEE	
<input type="checkbox"/>	Develop Prelim Cost Est & Sch for Land Acq / Abandonment	RA	
<input type="checkbox"/>	Begin Development of Draft Delivery Point Agreement	Contract Services	
<input type="checkbox"/>	Other:		
<input type="checkbox"/>	Other:		

**Checklist By:**

## Checklist of Activities to Complete During the Scoping Workshop

**Project Name:**

**Project ID No:**

**Requested ISD:**

	Activity
--	----------

<b>Welcome and Introductory Remarks</b>
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- |  |
|--|
| -Housekeeping Issues                       |
| -Self Introductions by Workshop Attendees  |
| -Circulation of Workshop Attendance Roster |

<b>Overview of Scoping Workshop</b>
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- |  |
|--|
| -Review of Checklist Major Categories                            |
| -Identify Applicable Deliverables and Assign Persons Responsible |
| -General Workshop Groundrules                                    |

<b>Summary of Project Requirements</b>
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- |   |
|---|
| -Distribute TVA / Customer Preliminary Drawings   |
| -Identify Contact Persons for Future Exchange of Project Drawings and Correspondence            |
| -Project Description, Review Preliminary Spec Diagram & Preliminary Comm Spec Diagram           |
| -Additional Project Discussion (Customer)   |
| -TOM Representatives Identify Need for Maintenance or Other Work During Outage for This Project |
| -Discuss Concept-Approval Process   |
| -Need for Keep-Whole Letter ?   |
| -Discuss Official Names of Substations and Transmission Lines On This Project                   |
| -Review Work Order Titles Already Identified  |
| -View Videos / Still Photos Obtained During On-Site Review                                      |
| -Substation and Transmission Line Siting Requirements   |
| -Results of Public Meeting / Information Day  |
| -Environmental Clearance Requirements and Status  |
| -Need for Temporary Feed During Construction  |
| -Special Construction Requirements Already Identified   |
| -Oil Spill Cleanup Considerations   |
| -Lessons Learned from Similar Projects  |

<b>Other Items or Footnotes to Items Above</b>
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**Checklist By:**



**Project Name:**

## DETAILED PROJECT SCOPING - CUSTOMER SUBSTATION - Electrical

	<b>Revenue Metering Arrangements</b>
	-2 or 3 Element?
	-Number and Type of Meter(s) (Quantum or JEM)
	-Indoor or Outdoor Mounting?
	-Metering Cabinet Pedestal Required?
	-Type and Ratings of Metering CTs
	-CT Bar Kits Required?
	-Type and Ratings of Metering VTs
	-Number of Test Boxes Required
	-Number of Fuse Boxes Required
	-CT and VT Structure Types and Who Provides? (46-kV Metering and Above)
	-Discuss CT and VT Structure Foundations (46-kV Metering and Above)
	-Pulse / Transducer Requirements
	-Telephone Arrangements
	-If Cellular Telephone -- Obtain Street Address of Customer Sub, Name of Cellular Carrier
	-Is Cellular Telephone for Billing Only? (If YES, Power Billing short code; If NO, TOM short code)
	Provide Revenue Metering Guide
	Provide Outline Drawings (Keep Copy or Drawing Numbers of Drawings Provided)
	-Metering Cabinet, Pedestal, Test Box, Fuse Box, CTs, PTs, Structures
	Retire Existing Metering?

	<b>Discuss / Review / Approve Customer Electrical Design</b>			
	-Review Relay and Protection Scheme Shown on Customer One-Line Diagram			
	-Include Selected Information from Customer One-Line on TVA Specification Diagram			
	-Customer Switch Numbers			
	-Underfrequency Relay Configuration			
	-Interconnection Sketch			
	-Programming of PLC (for Auto-Sectionalizing Schemes)			
	Is Customer One-Line Diagram Approved ?	YES	NO	(Circle one)

[illegible]

Checklist By:
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**Project Name:**

**DETAILED PROJECT SCOPING - CUSTOMER SUBSTATION - Physical / General**

<input type="checkbox"/>	<b>Review / Approve Customer Substation Physical Design</b>
<input type="checkbox"/>	Customer General Arrangement Plan / Site Plan
<input type="checkbox"/>	-Review if Design Adequate for Connection to TVA Transmission Line
<input type="checkbox"/>	-Review if Design Adequate to Accept TVA Spare Transformer
<input type="checkbox"/>	Customer Pulloff Structure Data
<input type="checkbox"/>	-Location (Survey plat or stake at center line?)
<input type="checkbox"/>	-Height
<input type="checkbox"/>	-Phase Spacing
<input type="checkbox"/>	-Allowable Tension
<input type="checkbox"/>	-Allowable Pulloff Angles
<input type="checkbox"/>	-Desired Phase Orientation
<input type="checkbox"/>	-Single or Double-Tongue Deadend Terminals?
<input type="checkbox"/>	-Yard Elevation Benchmark (Customer Survey vs. TVA Survey)
<input type="checkbox"/>	Are Customer Physical Drawings Approved ?                      YES                      NO                      (Circle one)

<input type="checkbox"/>	<b>Discuss Other Customer Design / Construction Considerations</b>
<input type="checkbox"/>	-Any Need for Additional Customer Land, R-O-W, or Structure Rights?
<input type="checkbox"/>	-Need for Customer Transformer Test Data
<input type="checkbox"/>	-Process for Coordination of Relay Settings
<input type="checkbox"/>	-Timing of Payments for Reimbursable Jobs
<input type="checkbox"/>	-Need for Electrical / Physical Documentation for Customer-Furnished Equipment
<input type="checkbox"/>	-Need for Drawing / Documentation for Customer-Built Facilities
<input type="checkbox"/>	-Facilities Shared Between Customer and TVA
<input type="checkbox"/>	-Need for Training / Certification for TVA Employees or Contractors Working in Customer Facilities

<input type="checkbox"/>	<b>Construction Interfaces Between TVA and Customer</b>
<input type="checkbox"/>	-TL Connection
<input type="checkbox"/>	-Static Wire(s)
<input type="checkbox"/>	-Revenue Metering
<input type="checkbox"/>	-Other

<input type="checkbox"/>	<b>Other Items or Footnotes to Items Above</b>
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

**Checklist By:**

Project Name: \_\_\_\_\_

## DETAILED PROJECT SCOPING - ELECTRICAL: TVA / Customer Subs and TLs

<b>Develop / CAD / Finalize TVA Specification Diagram</b>
List Summer and Winter Ratings for All New Equipment to be Installed
List Peak Loading to be Expected During the Next Five Year Period
Check Existing Equipment for Overload, Overstress, or Obsolescence
Check for Need to Replace Obsolete Gap-Type Surge Arresters
Check Need for Surge Arresters on Normally Open Equipment
Check Need for Surge Arresters on SF6 Breakers
Check Need for Bus PTs, Line / Spare Line CCVTs
Check Need for Wave Traps
Check Need for Neutral Reactors
Check Voltage Rise vs Neutral Reactor Bushing Rating (if Applicable)
Check for Available Station Service Source
Check Battery / Station Service Needs at Customer Sub (OK with Customer?)
Check Need for Supervisory Control / Dial-Up RTUs
Check Need for Digital Fault Recorder(s)
Check Need for Underfrequency Load Shedding
Check Relay Requirements: Line Relays / Spare Line?
Check Relay Requirements: Carrier Blocking?
Check Relay Requirements: Bus and / or Bank Differential?
Check Relay Requirements: Breaker Failure / Bus Breakup?
Check Relay Requirements: Polarizing Source?
Included Ultimate Diagram?
Specify Disposition of Retired Equipment (keep for spare parts?)
Approval Initials [Proj Mgr, Cust, Png Engr, Relay Engr (Png), Relay Engr (Op), Comm Png, TOM]

**Update FAWG Diagram(s) to Include Facilities Installed Under This Project**

[illegible]

Checklist By: \_\_\_\_\_



**Project Name:**

**DETAILED PROJECT SCOPING - TVA Transmission Line (Page 1)**

**Transmission Line Name / Work Order:**

**Transmission Line Contract Plan for This Work Order**

- TL Survey In-House or Contracted? (If Contracted, name Contractor)
- TL Design In-House or Contracted? (If Contracted, name Contractor)
- TL Construction In-House or Contracted? (If Contracted, name Contractor)

**Discuss Transmission Line Design Objectives (Refer to TL WO Sketch)**

**Transmission Line Terminations (Check the End Points of This Line)**

- Customer Pulloff Structure?
- Customer Tap/Loop Structure?
- TVA Substation Structure?
- TVA Switch Structure?
- TVA Tap/Loop Structure?
- Other?

**Transmission Line Information**

- New Right-of-Way Required?
- Preparation of Survey Request Package?
- Right-of-Way Width
- Use Existing Right-of-Way? (Is Reclearing, Additional Danger Tree Cutting Required?)
- Size and Tension of Phase Conductors
- Phasing Orientation
- Size, Number, and Tension of Overhead Ground Wires
- Fiber Optic Overhead Ground Wires?
- Insulated Overhead Ground Wires?
- Transmission Line Structure Types
- Structure Grounding Considerations
- Any Special Structures?
- Guying Requirements / type of Guy Anchors
- Use of Engineered Structures vs Guyed Structures (aesthetic or other reasons)
- Discuss TL Data Sheets ("SC" Drawings) Needed for This TL and Double-Circuit or Adjacent Sections

**Other Items or Footnotes to Items Above**

**Checklist By:**

**Project Name:**

**DETAILED PROJECT SCOPING - TVA Transmission Line (Page 2)**

**Transmission Line Name / Work Order:**

**Switch Considerations**

- How Many Switches?
- Switch Ratings (Amps)
- Switch / Structure / Foundation Type (Discuss with Customer / CSC)
- Load-break Enhancement

**Other Transmission Line Considerations**

- Any Substation Work Required Due to This TL Work?
- Are Wave Traps Required on TL Structures?
- Any Airports Nearby?
- Aircraft Warning Spheres Required?
- Aircraft / Strobe Lighting for TL Towers? (Identify Power Source)
- Any TEPCO Structures to Replace?
- Exceptions to Standard Right-of-Way Restoration Practice?
- Number of Clearance Poles Required

**Equipment / Material Procurement**

- Use Material from Stock Instead of New Purchase?
- X-File Development (Necessary? By Whom?)
- Shipping Destination
- Number of Cable Reels and Lengths (Coordinate with Construction)

**Permits**

- Highway Crossing
- Railroad Crossing
- Stormwater
- Other?

**How Many Sets of Construction Drawings?**

**High Hazard Construction Activities - JSA Published?**

**Other Items or Footnotes to Items Above**

**Checklist By;**

**Project Name:**

**DETAILED PROJECT SCOPING - TVA Substation (Page 1-- Physical Design)**

**Substation Name / Work Order:**

**Substation Contract Plan for This Work Order**

- Physical Design In-House or Contracted? (If Contracted, name Contractor)
- P&C Design In-House or Contracted? (If Contracted, name Contractor)
- Sub Construction In-House or Contracted? (If Contracted, name Contractor)

**Discuss Substation Design Objectives (Refer to Preliminary Gen Arrangement Plan)**

**Site and Site Development**

- Site, Soil, and Subsoil Characteristics (Dimensions, Survey By?, Soil Borings Required?)
- Access Road / Driveway
- Special Access Requirements for Equipment Maintenance
- Grading and Drainage
- Trench / Cable Tray / Conduit
- Oil Containment
- Yard Surface
- Fencing / Gates (If existing, note fabric height, barbed wire, if grounded)
- Foundations (Pier / Slab or Augered?)
- Lighting
- Any TL Work Required Due To This Substation Work? (TL Number Plate Changouts?)

**Grounding**

- Soil Resistivity (TOM Provide Data to Sub Physical Design for Ground Mat Calculations)
- Ground Mat
- Static Wires and Structures

**Structure Types**

**Bus Type**

**Insulators (Standard or High Strength?)**

**Switches**

- Hot Stick, Manually Gang-Operated, Motor-Operated, or Fault-Initiating

**Protective Devices**

- Breakers, Circuit Switchers, Surge / Lightning Arresters, Other

**Power Equipment**

- Transformers, Reactors, Resistors, Capacitor Banks, CTs, VTs, Other

**Other Items or Footnotes to Items Above**

**Checklist By:**



Project Name:	
---------------	--

**DETAILED PROJECT SCOPING - TVA Substation (Page 2-- P & C Design / General)**

**Substation Name / Work Order Number:**

	Switchhouse / Modifications
--	-----------------------------

- |  |
|--|
| -New Switchhouse ? (Type & Size)   |
| -Modify Existing Switchhouse?  |
| -Shared Switchhouse?   |
| -Discuss Relay Types   |
| -Panels / Switchboards (Size, Number, ID Number)                         |
| -Use Pre-wired Replacement Panels?                                       |
| -Replace Asbestos Panels?  |
| -Battery / Charger (Battery Study Necessary?)                            |
| -Utilities (Electricity, Phone, Water, Sewer, Heating, Air Conditioning) |

<input type="checkbox"/>	Equipment / Material Procurement
--------------------------	----------------------------------

- |   |
|---|
| -Use Material from Stock Instead of New Purchase? |
| -X-File Development (Necessary? By Whom?)         |
| -Shipping Destination (Laydown Yard Determined?)  |

Temporary Facilities Needed to Keep Substation In-Service During Construction?	
--	--

Relocate Any Customer-Owned Equipment?	
--	--

Stormwater / Other Permits Necessary?
---------------------------------------

How Many Sets of Construction Drawings?
---

High Hazard Construction Activities - JSA Published?
<div> <div></div> <div> <div></div> <div></div> </div> </div>

Other Items or Footnotes to Items Above
---

[illegible]

Checklist By:
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**Project Name:**

**DETAILED PROJECT SCOPING - Telecommunications Facility (Page 1)**

**Telecommunications Facility Name / Work Order:**

**Telecommunications Contract Plan for This Work Order**

- Controls Engineering In-House or Contracted? (If Contracted, name Contractor)
- Controls Design In-House or Contracted?
- Networks Engineering In-House or Contracted?
- Networks Design In-House or Contracted?
- Telecom Construction In-House or Contracted?
- Acceptance Testing of Installed System In-House or Contracted?
- Area Engineer Function In-House or Contracted?

**Site Considerations**

- TVA-Owned or Co-locate?
- Topography
- Clearing Requirements
- Environmental Issues
- Identify Utility / Telephone Company Access
- Proposed Antenna Tower Location
- Security Issues

**General Telecom Requirements**

- Dual Independent Paths Needed Back to PBC / PSCC ?
- Number / Location of Racks / Panels
- New Battery / Charger Needed?
- Global Positioning System (GPS) Receiver
- Alarms and Monitoring
- Equipment X-File Development (Necessary? By Whom?)
- Special Test Equipment Needed (Power Meter, Light Source, Digital Test Equipment, etc.)
- Acceptance Testing of Installed System
- Number of Sets of Drawings Needed for Construction (To Whom?)

**Existing Facilities / Equipment**

- Existing Switchhouse / Comm Room Space Adequate?
- Existing Antenna Tower Adequate? (Tower Loading Study Required? By Whom?)
- Existing Battery Adequate?

**High Hazard Construction Activities - JSA Published?**

**Other Items of Footnotes to Items Above**

**Checklist By:**

**Project Name:**

## DETAILED PROJECT SCOPING - Telecommunications Facility (Page 2)

Telecommunications Facility Name / Work Order:
--

## Discuss Fiber Optic Design Objectives

- |   |
|---|
| -Point of Presence                      |
| -Regen Facilities                       |
| -Splice Cases                           |
| -Splice Details                         |
| -Hand Holds                             |
| -Dielectric Cable Routing               |
| -TL OPGW Hardware Requirements          |
| -Replacement Parts Inventory / Location |
| -Terminal Equipment Devices             |
| -Terminal Equipment Power Requirements  |
| -OTDR Traces                            |
| -DB Loss Readings                       |

## Discuss Radio Design Objectives

- |  |   |
|--|---|
|  | -Frequency Band                           |
|  | -Receiver / Transmitter / Mux             |
|  | -FCC Permits / Requirements / Limitations |

Discuss Power Line Carrier Design Objectives
--

- |  |                               |
|--|-------------------------------|
|  | -Insulated OHGW?              |
|  | -Frequency Band               |
|  | -Receiver / Transmitter / Mux |
|  | -LTUs                         |
|  | -CCVTs                        |
|  | -Line Traps                   |

	Other Items or Footnotes to Items Above
--	---

[illegible]

Checklist By: \_\_\_\_\_

**Project Name:**

## **DETAILED PROJECT SCOPING - GENERAL**

### **Begin Preparation of TVA Work Order Estimates**

- Identify Additional Work Order Titles / Request Work Order Numbers
- Gather Needed Input from Participants in Workshop as Required
- Make "Best Effort" to Get Bottom Line Cost of Project During Workshop

### **Establish Project Schedule**

- Identify Customer Milestones to be Included
- Consider Time of Year When Scheduling Grading / Foundation Construction
- Include Outages Necessary for Construction
- Reconcile Project Schedule with Work Order Estimates
- Resource Load / Submit Schedule for Targeting
- Submit Schedule Float Calculations

### **Obtain Concurrence on Project ISD from All Participants**

### **Review / Discuss / Modify Draft Delivery Point Agreement**

### **Project Scope Recap and Review Scoping Deliverables**

- Recap of Project Scope, Points of Agreement, and Action Items
- Review Scoping Deliverables
  - Roster of Workshop Attendees
  - TVA Power Specification Diagram
  - TVA Communication Specification Diagram
  - TL Work Order Sketch ("CED" Drawing)
  - TVA General Arrangement Sketch - Initial and Ultimate
  - Other Scope Description Document(s)
  - Customer Drawing - One-Line Diagram
  - Customer Drawing - General Arrangement / Site Plan
  - Project Schedule
  - Draft Delivery Point Agreement
  - Points of Agreement / Action Item List
- Dismiss Customer and Contractor Representatives

### **Complete TVA Scoping Activities**

- Request TVA Switch Numbers
- Request TVA TL Numbers / Structure Numbers
- Complete / Obtain Product Line Signatures on Work Order Estimates / Transmit to WMPS
- Verify that Work Order Totals Do Not Exceed Concept-Approved Amount
- Move Schedule from Scoping into Production
- Complete and Distribute "As-Scoped" Project Summary
- Begin Process to Obtain Remaining Signatures on Original Work Order Estimates
- Distribute Power and / or Communication Spec Diagrams
- Prepare and Distribute Scoping Package
- Document Scoping Workshop "Lessons Learned"
- Transmit Scoping Notebook to Project Manager / Handoff Project



## **Exhibit B**

### **Contents of the Project Scoping Package**

- Roster of workshop attendees
- TVA power specification diagram
- TVA communication specification diagram
- TVA transmission line work order sketch
- TVA substation general arrangement plan (initial and ultimate)
- Property/site maps
- Construction interface sketch
- Customer single-line diagram
- Customer substation general arrangement plan (initial and ultimate)
- Project schedule
- Summary of estimated costs
- Points of agreement between TVA and customer

**Project Name:**

## DETAILED PROJECT SCOPING - GENERAL

### Begin Preparation of TVA Work Order Estimates

- Identify Additional Work Order Titles / Request Work Order Numbers
- Gather Needed Input from Participants in Workshop as Required
- Make "Best Effort" to Get Bottom Line Cost of Project During Workshop

### Establish Project Schedule

- Identify Customer Milestones to be Included
- Consider Time of Year When Scheduling Grading / Foundation Construction
- Include Outages Necessary for Construction
- Reconcile Project Schedule with Work Order Estimates
- Resource Load / Submit Schedule for Targeting
- Submit Schedule Float Calculations

### Obtain Concurrence on Project ISD from All Participants

### Review / Discuss / Modify Draft Delivery Point Agreement

### Project Scope Recap and Review Scoping Deliverables

- Recap of Project Scope, Points of Agreement, and Action Items
- Review Scoping Deliverables
- Roster of Workshop Attendees
- TVA Power Specification Diagram
- TVA Communication Specification Diagram
- TL Work Order Sketch ("CED" Drawing)
- TVA General Arrangement Sketch - Initial and Ultimate
- Other Scope Description Document(s)
- Customer Drawing - One-Line Diagram
- Customer Drawing - General Arrangement / Site Plan
- Project Schedule
- Draft Delivery Point Agreement
- Points of Agreement / Action Item List
- Dismiss Customer and Contractor Representatives

### Complete TVA Scoping Activities

- Request TVA Switch Numbers
- Request TVA TL Numbers / Structure Numbers
- Complete / Obtain Product Line Signatures on Work Order Estimates / Transmit to WMPS
- Verify that Work Order Totals Do Not Exceed Concept-Approved Amount
- Move Schedule from Scoping into Production
- Complete and Distribute "As-Scoped" Project Summary
- Begin Process to Obtain Remaining Signatures on Original Work Order Estimates
- Distribute Power and / or Communication Spec Diagrams
- Prepare and Distribute Scoping Package
- Document Scoping Workshop "Lessons Learned"
- Transmit Scoping Notebook to Project Manager / Handoff Project

## Checklist of Activities to Complete During the Scoping Workshop

**Project Name:**

**Project ID No:**

**Requested ISD:**

	Activity
--	----------

### Welcome and Introductory Remarks

- Housekeeping Issues
- Self Introductions by Workshop Attendees
- Circulation of Workshop Attendance Roster

### Overview of Scoping Workshop

- Review of Checklist Major Categories
- Identify Applicable Deliverables and Assign Persons Responsible
- General Workshop Groundrules

### Summary of Project Requirements

- Distribute TVA / Customer Preliminary Drawings
- Identify Contact Persons for Future Exchange of Project Drawings and Correspondence
- Project Description, Review Preliminary Spec Diagram & Preliminary Comm Spec Diagram
- Additional Project Discussion (Customer)
- TOM Representatives Identify Need for Maintenance or Other Work During Outage for This Project
- Discuss Concept-Approval Process
- Need for Keep-Whole Letter ?
- Discuss Official Names of Substations and Transmission Lines On This Project
- Review Work Order Titles Already Identified
- View Videos / Still Photos Obtained During On-Site Review
- Substation and Transmission Line Siting Requirements
- Results of Public Meeting / Information Day
- Environmental Clearance Requirements and Status
- Need for Temporary Feed During Construction
- Special Construction Requirements Already Identified
- Oil Spill Cleanup Considerations
- Lessons Learned from Similar Projects

### Other Items or Footnotes to Items Above

**Checklist By:**

**Project Name:**

**DETAILED PROJECT SCOPING - CUSTOMER SUBSTATION - Electrical**

<input type="checkbox"/>	<b>Revenue Metering Arrangements</b>
<input type="checkbox"/>	-2 or 3 Element?
<input type="checkbox"/>	-Number and Type of Meter(s) (Quantum or JEM)
<input type="checkbox"/>	-Indoor or Outdoor Mounting?
<input type="checkbox"/>	-Metering Cabinet Pedestal Required?
<input type="checkbox"/>	-Type and Ratings of Metering CTs
<input type="checkbox"/>	-CT Bar Kits Required?
<input type="checkbox"/>	-Type and Ratings of Metering VTs
<input type="checkbox"/>	-Number of Test Boxes Required
<input type="checkbox"/>	-Number of Fuse Boxes Required
<input type="checkbox"/>	-CT and VT Structure Types and Who Provides? (46-kV Metering and Above)
<input type="checkbox"/>	-Discuss CT and VT Structure Foundations (46-kV Metering and Above)
<input type="checkbox"/>	-Pulse / Transducer Requirements
<input type="checkbox"/>	-Telephone Arrangements
<input type="checkbox"/>	-If Cellular Telephone -- Obtain Street Address of Customer Sub, Name of Cellular Carrier
<input type="checkbox"/>	-Is Cellular Telephone for Billing Only? (If YES, Power Billing short code; If NO, TOM short code)
<input type="checkbox"/>	Provide Revenue Metering Guide
<input type="checkbox"/>	Provide Outline Drawings (Keep Copy or Drawing Numbers of Drawings Provided)
<input type="checkbox"/>	-Metering Cabinet, Pedestal, Test Box, Fuse Box, CTs, PTs, Structures
<input type="checkbox"/>	Retire Existing Metering?

<input type="checkbox"/>	<b>Discuss / Review / Approve Customer Electrical Design</b>
<input type="checkbox"/>	-Review Relay and Protection Scheme Shown on Customer One-Line Diagram
<input type="checkbox"/>	-Include Selected Information from Customer One-Line on TVA Specification Diagram
<input type="checkbox"/>	-Customer Switch Numbers
<input type="checkbox"/>	-Underfrequency Relay Configuration
<input type="checkbox"/>	-Interconnection Sketch
<input type="checkbox"/>	-Programming of PLC (for Auto-Sectionalizing Schemes)
<input type="checkbox"/>	Is Customer One-Line Diagram Approved ?                      YES                      NO                      (Circle one)

<input type="checkbox"/>	<b>Other Items or Footnotes to Items Above</b>
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

**Checklist By:**



**Project Name:**

**DETAILED PROJECT SCOPING - CUSTOMER SUBSTATION - Physical / General**

<input type="checkbox"/>	<b>Review / Approve Customer Substation Physical Design</b>
<input type="checkbox"/>	Customer General Arrangement Plan / Site Plan
<input type="checkbox"/>	-Review if Design Adequate for Connection to TVA Transmission Line
<input type="checkbox"/>	-Review if Design Adequate to Accept TVA Spare Transformer
<input type="checkbox"/>	Customer Pulloff Structure Data
<input type="checkbox"/>	-Location (Survey plat or stake at center line?)
<input type="checkbox"/>	-Height
<input type="checkbox"/>	-Phase Spacing
<input type="checkbox"/>	-Allowable Tension
<input type="checkbox"/>	-Allowable Pulloff Angles
<input type="checkbox"/>	-Desired Phase Orientation
<input type="checkbox"/>	-Single or Double-Tongue Deadend Terminals?
<input type="checkbox"/>	-Yard Elevation Benchmark (Customer Survey vs. TVA Survey)
<input type="checkbox"/>	Are Customer Physical Drawings Approved ?                      YES                      NO                      (Circle one)

<input type="checkbox"/>	<b>Discuss Other Customer Design / Construction Considerations</b>
<input type="checkbox"/>	-Any Need for Additional Customer Land, R-O-W, or Structure Rights?
<input type="checkbox"/>	-Need for Customer Transformer Test Data
<input type="checkbox"/>	-Process for Coordination of Relay Settings
<input type="checkbox"/>	-Timing of Payments for Reimbursable Jobs
<input type="checkbox"/>	-Need for Electrical / Physical Documentation for Customer-Furnished Equipment
<input type="checkbox"/>	-Need for Drawing / Documentation for Customer-Built Facilities
<input type="checkbox"/>	-Facilities Shared Between Customer and TVA
<input type="checkbox"/>	-Need for Training / Certification for TVA Employees or Contractors Working in Customer Facilities

<input type="checkbox"/>	<b>Construction Interfaces Between TVA and Customer</b>
<input type="checkbox"/>	-TL Connection
<input type="checkbox"/>	-Static Wire(s)
<input type="checkbox"/>	-Revenue Metering
<input type="checkbox"/>	-Other

<input type="checkbox"/>	<b>Other Items or Footnotes to Items Above</b>
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

**Checklist By:**

Project Name: \_\_\_\_\_

## DETAILED PROJECT SCOPING - ELECTRICAL: TVA / Customer Subs and TLs

	<b>Develop / CAD / Finalize TVA Specification Diagram</b>
	List Summer and Winter Ratings for All New Equipment to be Installed
	List Peak Loading to be Expected During the Next Five Year Period
	Check Existing Equipment for Overload, Overstress, or Obsolescence
	Check for Need to Replace Obsolete Gap-Type Surge Arresters
	Check Need for Surge Arresters on Normally Open Equipment
	Check Need for Surge Arresters on SF6 Breakers
	Check Need for Bus PTs, Line / Spare Line CCVTs
	Check Need for Wave Traps
	Check Need for Neutral Reactors
	Check Voltage Rise vs Neutral Reactor Bushing Rating (if Applicable)
	Check for Available Station Service Source
	Check Battery / Station Service Needs at Customer Sub (OK with Customer?)
	Check Need for Supervisory Control / Dial-Up RTUs
	Check Need for Digital Fault Recorder(s)
	Check Need for Underfrequency Load Shedding
	Check Relay Requirements: Line Relays / Spare Line?
	Check Relay Requirements: Carrier Blocking?
	Check Relay Requirements: Bus and / or Bank Differential?
	Check Relay Requirements: Breaker Failure / Bus Breakup?
	Check Relay Requirements: Polarizing Source?
	Included Ultimate Diagram?
	Specify Disposition of Retired Equipment (keep for spare parts?)
	Approval Initials [Proj Mgr, Cust, PIng Engr, Relay Engr (PIng), Relay Engr (Op), Comm PIng, TOM]

**Update FAWG Diagram(s) to Include Facilities Installed Under This Project**

[illegible]

Checklist By: \_\_\_\_\_

<b>Project Name:</b>
----------------------

**DETAILED PROJECT SCOPING - TVA Transmission Line (Page 1)**

<b>Transmission Line Name / Work Order:</b>
---

<input type="checkbox"/>	<b>Transmission Line Contract Plan for This Work Order</b>
<input type="checkbox"/>	-TL Survey In-House or Contracted? (If Contracted, name Contractor)
<input type="checkbox"/>	-TL Design In-House or Contracted? (If Contracted, name Contractor)
<input type="checkbox"/>	-TL Construction In-House or Contracted? (If Contracted, name Contractor)

<input type="checkbox"/>	<b>Discuss Transmission Line Design Objectives (Refer to TL WO Sketch)</b>
<input type="checkbox"/>	<b>Transmission Line Terminations (Check the End Points of This Line)</b>
<input type="checkbox"/>	-Customer Pulloff Structure?
<input type="checkbox"/>	-Customer Tap/Loop Structure?
<input type="checkbox"/>	-TVA Substation Structure?
<input type="checkbox"/>	-TVA Switch Structure?
<input type="checkbox"/>	-TVA Tap/Loop Structure?
<input type="checkbox"/>	-Other?
<input type="checkbox"/>	<b>Transmission Line Information</b>
<input type="checkbox"/>	-New Right-of-Way Required?
<input type="checkbox"/>	-Preparation of Survey Request Package?
<input type="checkbox"/>	-Right-of-Way Width
<input type="checkbox"/>	-Use Existing Right-of-Way? (Is Reclearing, Additional Danger Tree Cutting Required?)
<input type="checkbox"/>	-Size and Tension of Phase Conductors
<input type="checkbox"/>	-Phasing Orientation
<input type="checkbox"/>	-Size, Number, and Tension of Overhead Ground Wires
<input type="checkbox"/>	-Fiber Optic Overhead Ground Wires?
<input type="checkbox"/>	-Insulated Overhead Ground Wires?
<input type="checkbox"/>	-Transmission Line Structure Types
<input type="checkbox"/>	-Structure Grounding Considerations
<input type="checkbox"/>	-Any Special Structures?
<input type="checkbox"/>	-Guying Requirements / type of Guy Anchors
<input type="checkbox"/>	-Use of Engineered Structures vs Guyed Structures (aesthetic or other reasons)
<input type="checkbox"/>	-Discuss TL Data Sheets ("SC" Drawings) Needed for This TL and Double-Circuit or Adjacent Sections

<input type="checkbox"/>	<b>Other Items or Footnotes to Items Above</b>
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

<b>Checklist By:</b>
----------------------

**Project Name:**

**DETAILED PROJECT SCOPING - TVA Transmission Line (Page 2)**

**Transmission Line Name / Work Order:**

<input type="checkbox"/>	<b>Switch Considerations</b>
<input type="checkbox"/>	-How Many Switches?
<input type="checkbox"/>	-Switch Ratings (Amps)
<input type="checkbox"/>	-Switch / Structure / Foundation Type (Discuss with Customer / CSC)
<input type="checkbox"/>	-Load-break Enhancement
<input type="checkbox"/>	<b>Other Transmission Line Considerations</b>
<input type="checkbox"/>	-Any Substation Work Required Due to This TL Work?
<input type="checkbox"/>	-Are Wave Traps Required on TL Structures?
<input type="checkbox"/>	-Any Airports Nearby?
<input type="checkbox"/>	-Aircraft Warning Spheres Required?
<input type="checkbox"/>	-Aircraft / Strobe Lighting for TL Towers? (Identify Power Source)
<input type="checkbox"/>	-Any TEPCO Structures to Replace?
<input type="checkbox"/>	-Exceptions to Standard Right-of-Way Restoration Practice?
<input type="checkbox"/>	-Number of Clearance Poles Required
<input type="checkbox"/>	<b>Equipment / Material Procurement</b>
<input type="checkbox"/>	-Use Material from Stock Instead of New Purchase?
<input type="checkbox"/>	-X-File Development (Necessary? By Whom?)
<input type="checkbox"/>	-Shipping Destination
<input type="checkbox"/>	-Number of Cable Reels and Lengths (Coordinate with Construction)
<input type="checkbox"/>	<b>Permits</b>
<input type="checkbox"/>	-Highway Crossing
<input type="checkbox"/>	-Railroad Crossing
<input type="checkbox"/>	-Stormwater
<input type="checkbox"/>	-Other?

**How Many Sets of Construction Drawings?**

**High Hazard Construction Activities - JSA Published?**

<input type="checkbox"/>	<b>Other Items or Footnores to Items Above</b>
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

**Checklist By;**



<b>Project Name:</b>
----------------------

**DETAILED PROJECT SCOPING - TVA Substation (Page 1-- Physical Design)**

<b>Substation Name / Work Order:</b>
--------------------------------------

<input type="checkbox"/>	<b>Substation Contract Plan for This Work Order</b>
<input type="checkbox"/>	-Physical Design In-House or Contracted? (If Contracted, name Contractor)
<input type="checkbox"/>	-P&C Design In-House or Contracted? (If Contracted, name Contractor)
<input type="checkbox"/>	-Sub Construction In-House or Contracted? (If Contracted, name Contractor)

<input type="checkbox"/>	<b>Discuss Substation Design Objectives (Refer to Preliminary Gen Arrangement Plan)</b>
<input type="checkbox"/>	<b>Site and Site Development</b>
<input type="checkbox"/>	-Site, Soil, and Subsoil Characteristics (Dimensions, Survey By?, Soil Borings Required?)
<input type="checkbox"/>	-Access Road / Driveway
<input type="checkbox"/>	-Special Access Requirements for Equipment Maintenance
<input type="checkbox"/>	-Grading and Drainage
<input type="checkbox"/>	-Trench / Cable Tray / Conduit
<input type="checkbox"/>	-Oil Containment
<input type="checkbox"/>	-Yard Surface
<input type="checkbox"/>	-Fencing / Gates (If existing, note fabric height, barbed wire, if grounded)
<input type="checkbox"/>	-Foundations (Pier / Slab or Augered?)
<input type="checkbox"/>	-Lighting
<input type="checkbox"/>	-Any TL Work Required Due To This Substation Work? (TL Number Plate Changouts?)
<input type="checkbox"/>	<b>Grounding</b>
<input type="checkbox"/>	-Soil Resistivity (TOM Provide Data to Sub Physical Design for Ground Mat Calculations)
<input type="checkbox"/>	-Ground Mat
<input type="checkbox"/>	-Static Wires and Structures
<input type="checkbox"/>	<b>Structure Types</b>
<input type="checkbox"/>	<b>Bus Type</b>
<input type="checkbox"/>	<b>Insulators</b> (Standard or High Strength?)
<input type="checkbox"/>	<b>Switches</b>
<input type="checkbox"/>	-Hot Stick, Manually Gang-Operated, Motor-Operated, or Fault-Initiating
<input type="checkbox"/>	<b>Protective Devices</b>
<input type="checkbox"/>	-Breakers, Circuit Switchers, Surge / Lightning Arresters, Other
<input type="checkbox"/>	<b>Power Equipment</b>
<input type="checkbox"/>	-Transformers, Reactors, Resistors, Capacitor Banks, CTs, VTs, Other

<input type="checkbox"/>	<b>Other Items or Footnotes to Items Above</b>
<input type="checkbox"/>	
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<b>Checklist By:</b>
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Project Name: \_\_\_\_\_

## DETAILED PROJECT SCOPING - TVA Substation (Page 2-- P & C Design / General)

**Substation Name / Work Order Number:**

	Switchhouse / Modifications
--	-----------------------------

- |  |  |
|--|--|
|  | -New Switchhouse ? (Type & Size)   |
|  | -Modify Existing Switchhouse?  |
|  | -Shared Switchhouse?   |
|  | -Discuss Relay Types   |
|  | -Panels / Switchboards (Size, Number, ID Number)                         |
|  | -Use Pre-wired Replacement Panels?                                       |
|  | -Replace Asbestos Panels?  |
|  | -Battery / Charger (Battery Study Necessary?)                            |
|  | -Utilities (Electricity, Phone, Water, Sewer, Heating, Air Conditioning) |

Equipment / Material Procurement
----------------------------------

- |  |   |
|--|---|
|  | -Use Material from Stock Instead of New Purchase? |
|  | -X-File Development (Necessary? By Whom?)         |
|  | -Shipping Destination (Laydown Yard Determined?)  |

Temporary Facilities Needed to Keep Substation In-Service During Construction?	
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100	100

	Relocate Any Customer-Owned Equipment?
--	--

	Stormwater / Other Permits Necessary?
--	---------------------------------------

	How Many Sets of Construction Drawings?
--	---

	High Hazard Construction Activities - JSA Published?
--	--

Other Items or Footnotes to Items Above	
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[illegible]

Checklist By: \_\_\_\_\_

**Project Name:**

**DETAILED PROJECT SCOPING - Telecommunications Facility (Page 1)**

**Telecommunications Facility Name / Work Order:**

**Telecommunications Contract Plan for This Work Order**

- Controls Engineering In-House or Contracted? (If Contracted, name Contractor)
- Controls Design In-House or Contracted?
- Networks Engineering In-House or Contracted?
- Networks Design In-House or Contracted?
- Telecom Construction In-House or Contracted?
- Acceptance Testing of Installed System In-House or Contracted?
- Area Engineer Function In-House or Contracted?

**Site Considerations**

- TVA-Owned or Co-locate?
- Topography
- Clearing Requirements
- Environmental Issues
- Identify Utility / Telephone Company Access
- Proposed Antenna Tower Location
- Security Issues

**General Telecom Requirements**

- Dual Independent Paths Needed Back to PBC / PSCC ?
- Number / Location of Racks / Panels
- New Battery / Charger Needed?
- Global Positioning System (GPS) Receiver
- Alarms and Monitoring
- Equipment X-File Development (Necessary? By Whom?)
- Special Test Equipment Needed (Power Meter, Light Source, Digital Test Equipment, etc.)
- Acceptance Testing of Installed System
- Number of Sets of Drawings Needed for Construction (To Whom?)

**Existing Facilities / Equipment**

- Existing Switchhouse / Comm Room Space Adequate?
- Existing Antenna Tower Adequate? (Tower Loading Study Required? By Whom?)
- Existing Battery Adequate?

**High Hazard Construction Activities - JSA Published?**

**Other Items of Footnotes to Items Above**

**Checklist By:**

**Project Name:**

**DETAILED PROJECT SCOPING - Telecommunications Facility (Page 2)**

**Telecommunications Facility Name / Work Order:**

**Discuss Fiber Optic Design Objectives**

- Point of Presence
- Regen Facilities
- Splice Cases
- Splice Details
- Hand Holds
- Dielectric Cable Routing
- TL OPGW Hardware Requirements
- Replacement Parts Inventory / Location
- Terminal Equipment Devices
- Terminal Equipment Power Requirements
- OTDR Traces
- DB Loss Readings

**Discuss Radio Design Objectives**

- Frequency Band
- Receiver / Transmitter / Mux
- FCC Permits / Requirements / Limitations

**Discuss Power Line Carrier Design Objectives**

- Insulated OHGW?
- Frequency Band
- Receiver / Transmitter / Mux
- LTUs
- CCVTs
- Line Traps

**Other Items or Footnotes to Items Above**

**Checklist By:**



**Project Name:**

## DETAILED PROJECT SCOPING - GENERAL

### **Begin Preparation of TVA Work Order Estimates**

- Identify Additional Work Order Titles / Request Work Order Numbers
- Gather Needed Input from Participants in Workshop as Required
- Make "Best Effort" to Get Bottom Line Cost of Project During Workshop

### **Establish Project Schedule**

- Identify Customer Milestones to be Included
- Consider Time of Year When Scheduling Grading / Foundation Construction
- Include Outages Necessary for Construction
- Reconcile Project Schedule with Work Order Estimates
- Resource Load / Submit Schedule for Targeting
- Submit Schedule Float Calculations

### **Obtain Concurrence on Project ISD from All Participants**

### **Review / Discuss / Modify Draft Delivery Point Agreement**

### **Project Scope Recap and Review Scoping Deliverables**

- Recap of Project Scope, Points of Agreement, and Action Items
- Review Scoping Deliverables
- Roster of Workshop Attendees
- TVA Power Specification Diagram
- TVA Communication Specification Diagram
- TL Work Order Sketch ("CED" Drawing)
- TVA General Arrangement Sketch - Initial and Ultimate
- Other Scope Description Document(s)
- Customer Drawing - One-Line Diagram
- Customer Drawing - General Arrangement / Site Plan
- Project Schedule
- Draft Delivery Point Agreement
- Points of Agreement / Action Item List
- Dismiss Customer and Contractor Representatives

### **Complete TVA Scoping Activities**

- Request TVA Switch Numbers
- Request TVA TL Numbers / Structure Numbers
- Complete / Obtain Product Line Signatures on Work Order Estimates / Transmit to WMPS
- Verify that Work Order Totals Do Not Exceed Concept-Approved Amount
- Move Schedule from Scoping into Production
- Complete and Distribute "As-Scoped" Project Summary
- Begin Process to Obtain Remaining Signatures on Original Work Order Estimates
- Distribute Power and / or Communication Spec Diagrams
- Prepare and Distribute Scoping Package
- Document Scoping Workshop "Lessons Learned"
- Transmit Scoping Notebook to Project Manager / Handoff Project

## **Enclosure 5**

### **Contents of the Project Scoping Package**

- Roster of workshop attendees
- TVA power specification diagram
- TVA communication specification diagram
- TVA transmission line work order sketch
- TVA substation general arrangement plan (initial and ultimate)
- Property/site maps
- Construction interface sketch
- Customer single-line diagram
- Customer substation general arrangement plan (initial and ultimate)
- Project schedule
- Summary of estimated costs
- Points of agreement between TVA and customer